

FIGURE 1. Nucleotide and deduced amino acid sequences of HPV18 L1.

10 20 30 40 50 60
 ATGGCTTTGTGGCGGCCTAGTGACAATACCGTATACCTTCCACCTCCTTCTGTGGCAAGA
 1 M A L W R P S D N T V Y L P P P S V A R 20

70 80 90 100 110 120
 GTTGTAAATACTGATGATTATGTGACTCGCACAAGCATATTTTATCATGCTGGCAGCTCT
 21 V V N T D D Y V T R T S I F Y H A G S S 40

130 140 150 160 170 180
 AGATTATTAACGTGTGGTAATCCATATTTTAGGGTTCCTGCAGGTGGTGGCAATAAGCAG
 41 R L L T V G N P Y F R V P A G G G N K Q 60

190 200 210 220 230 240
 GATATTCCTAAGGTTTCTGCATACCAATATAGAGTATTTTCGGGTGCAGTTACCTGACCCA
 61 D I P K V S A Y Q Y R V F R V Q L P D P 80

250 260 270 280 290 300
 AATAAATTTGGTTTACCTGATAATAGTATTTATAATCCTGAAACACAACGTTTAGTGTGG
 81 N K F G L P D N S I Y N P E T Q R L V W 100

310 320 330 340 350 360
 GCCTGTGCTGGAGTGGAAATTGGCCGTGGTCAGCCTTTAGGTGTTGGCCTTAGTGGGCAT
 101 A C A G V E I G R G Q P L G V G L S G H 120

370 380 390 400 410 420
 CCATTTTATAATAAATTAGATGACACTGAAAGTTCCCATGCCGCTACGTCTAATGTTTCT
 121 P F Y N K L D D T E S S H A A T S N V S 140

430 440 450 460 470 480
 GAGGACGTTAGGGACAATGTGTCTGTAGATTATAAGCAGACACAGTTATGTATTTTGGGC
 141 E D V R D N V S V D Y K Q T Q L C I L G 160

490 500 510 520 530 540
 TGTGCCCCCTGCTATTGGGGAACACTGGGCTAAAGGCACTGCTTGTAAATCGCGTCCTTTA
 161 C A P A I G E H W A K G T A C K S R P L 180

550 560 570 580 590 600
 TCACAGGGCGATTGCCCCCTTTAGAACTTAAGAACACAGTTTGGGAAGATGGTGATATG
 181 S Q G D C P P L E L K N T V L E D G D M 200

610 620 630 640 650 660
 GTAGATACTGGATATGGTGCCATGGACTTTAGTACATTGCAAGATACTAAATGTGAGGTA
 201 V D T G Y G A M D F S T L Q D T K C E V 220

670 680 690 700 710 720
 CCATTGGATATTTGTCACTCTATTTGTAAATATCCTGATTATTTACAAATGTCTGCAGAT
 221 P L D I C Q S I C K Y P D Y L Q M S A D 240

730 740 750 760 770 780
 CCTTATGGGGATTCCATGTTTTTTTGCTTACGACGTGAGCAGCTTTTGTAGGCATTTT
 241 P Y G D S M F F C L R R E Q L F A R H F 260

790 800 810 820 830 840
 TGGAATAGGGCAGGTACTATGGGTGACACTGTGCCCTCAATCCTTATATATTAAAGGCACA
 261 W N R A G T M G D T V P Q S L Y I K G T 280

850 860 870 880 890 900
 GGTATGCGTGCTTCACCTGGCAGCTGTGTGATTCTCCCTCTCCAAGTGGCTCTATTGTT
 281 G M R A S P G S C V Y S P S P S G S I V 300

910 920 930 940 950 960
 ACCTCTGACTCCCAGTTGTTTAATAAACCATATTGGTTACATAAGGCACAGGGTCATAAC
 301 T S D S Q L F N K P Y W L H K A Q G H N 320

HPV18

L1

FIGURE 1 (CONTINUED)

970 1000 1020
 AATGGTATCTGCTGGCATAATCAATTATTTGTTACTGTGGTAGATACCACTCGTAGTACC
 321 N G I C W H N Q L F V T V V D T T R S T 340
 1030 1040 1050 1060 1070 1080
 AATTTAACAATATGTGCTTCTACACAGTCTCCTGTACCTGGGCAATATGATGCTACCAAA
 341 N L T I C A S T Q S P V P G Q Y D A T K 360
 1090 1100 1110 1120 1130 1140
 TTTAAGCAGTATAGCAGACATGTTGAAGAATATGATTTGCAGTTTATTTTTCAGTTATGT
 361 F K Q Y S R H V E E Y D L Q F I F Q L C 380
 1150 1160 1170 1180 1190 1200
 ACTATTACTTTAACTGCAGATGTTATGTCCTATATTCATAGTATGAATAGCAGTATTTTA
 381 T I T L T A D V M S Y I H S M N S S I L 400
 1210 1220 1230 1240 1250 1260
 GAGGATTGGAACCTTTGGTGTTCCTCCCCCGCCAACTACTAGTTTGGTGGATACATATCGT
 401 E D W N F G V P P P P T T S L V D T Y R 420
 1270 1280 1290 1300 1310 1320
 TTTGTACAATCTGTTGCTATTACCTGTCAAAGGATGCTGCACCAGCTGAAAATAAGGAT
 421 F V Q S V A I T C Q K D A A P A E N K D 440
 1330 1340 1350 1360 1370 1380
 CCCTATGATAAGTTAAAGTTTGGAAATGTGGATTTAAAGGAAAAGTTTCTTTGGACTTA
 441 P Y D K L K F W N V D L K E K F S L D L 460
 1390 1400 1410 1420 1430 1440
 GATCAATATCCCCTTGGACGTAAATTTTGGTTTCAGGCTGGATTGCGTCGCAAGCCCACC
 461 D Q Y P L G R K F L V Q A G L R R K P T 480
 1450 1460 1470 1480 1490 1500
 ATAGGCCCTCGTAAACGTTCTGCTCCATCTGCCACTACGTCTTCTAAACCTGCCAAGCGT
 481 I G P R K R S A P S A T T S S K P A K R 500
 1510 1520
 GTGCGTGTACGTGCCAGGAAGTAA
 501 V R V R A R K • 508

HPV18

L1

FIGURE 2. Amino Acid Variations In L1 Protein Of HPV18

	<u>Amino Acid Position in L1</u>				
	<u>30</u>	<u>88</u>	<u>283</u>	<u>323</u>	<u>338</u>
HPV18 published	P	T	P	V	P
HPV18 Merck	R	N	R	I	R
#354	R	N	R	V	R
#556	R	N	R	V	R
#755	-	-	R	V	R
#697	-	-	R	V	R
#795	-	-	R	V	R
#23	-	-	R	I	R

SOURCES:

HPV18 published: DNA sequence (GenBank accession no. X05015; Cole, S.T. and Danos, O., 1987, J. Mol. Biol. 193: 599-608).
Originally cloned from a cervical carcinoma of a Brazilian patient (Boshart, M., et al., 1984, EMBO J. 3: 1151-1157).

HPV18 Merck: Cloned from cell line SW756 derived from a cervical carcinoma (Freedman, R.S., et al., 1982, In Vitro 18: 719-726). SW756 was established in 1974 from biopsy material collected in Texas.

#354-#795: Clinical specimens collected at Veterans Administration Medical Center, Indianapolis, Indiana.

#23: Clinical specimen collected at Albert Einstein Medical Center, Philadelphia, Pennsylvania.

FIGURE 3. Nucleotide and deduced amino acid sequences of HPV18 L2.

	10	20	30	40	50	60	
	ATGGTATCCCAACCGTGCCGCACGACGCAAACGGGCTTCGGTGACTGACTTATATAAAACA						
1	M	V	S	H	R	A	20
	70	80	90	100	110	120	
21	TGTAACAATCTGGTACATGTCCATCTGATGTTGTTAATAAGGTAGAGGGCACCACGTTA						40
	130	140	150	160	170	180	
41	GCAGATAAAATATTGCAATGGTCAAGCCTTGGTATATTTTGGGTGGACTTGGCATAGGT						60
	190	200	210	220	230	240	
61	ACTGGAAGTGGTACAGGGGGTCTGACAGGGTACATTCCATTGGGTGGGCGTTCCAATACA						80
	250	260	270	280	290	300	
81	GTTGTGGATGTCCGGTCTACACGTCCTCCAGTGGTTATTGAACCTGTGGGCCCCACAGAC						100
	310	320	330	340	350	360	
101	CCATCTATTGTTACATTAATAGAGGACTCAAGTGTGTTACATCAGGTGCACCTAGGCCT						120
	370	380	390	400	410	420	
121	ACTTTTACTGGCAGCTCTGGGTTTGATATAACATCTGCTGGTACAACCTACACCTGCAGTT						140
	430	440	450	460	470	480	
141	TTGGATATCACACCTTCGCTACCTCTGTTTCTATTTCACAACCAATTTACCAATCCT						160
	490	500	510	520	530	540	
161	GCATTTTCTGATCCGTCATTATTGAAGTTCACAAACTGGGGAGGTGTCAGGTAATGTA						180
	550	560	570	580	590	600	
181	TTTGTGGTACCCCTACATCTGGAACACATGGGTATGAAGAAATACCTTTACAAACATTT						200
	610	620	630	640	650	660	
201	GCTTCTTCTGGTACGGGGGAGGAACCCATTAGTAGTACCCCATTCCTACTGTGCGGCGT						220
	670	680	690	700	710	720	
221	GTAGCAGGTCCCCGCTTTACAGTAGGGCTACCAACAAGTGTCTGTGGCTAACCCCTGAG						240
	730	740	750	760	770	780	
241	TTTCTTACACGTCCATCCTCTTTAATTACCTATGACAACCCGGCCTTTGAGCCTGTGGAC						260
	790	800	810	820	830	840	
261	ACTACATTAACATTTGAGCCTCGTAGTAATGTTCCCTGATTGAGATTTTATGGATATTATC						280
	850	860	870	880	890	900	
281	CGTTTACATAGGCCTGCTTTAACATCCAGGCGTGGTACTGTGCGCTTTAGTAGATTAGGT						300
	910	920	930	940	950	960	
301	CAAAGGGCAACTATGTTTACCCGTAGCGGTACACAAATAGGTGCTAGGGTTCACTTTTAT						320

HPV18

L2

FIGURE 3 (continued)

970 990 1000 1010 1020
 CATGATATAAGTCCTATTGCACCCTCCCCAGAATATATTGAACTGCAGCCCTTAGTATCT
 321 H D I S P I A P S P E Y I E L Q P L V S 340
 1030 1040 1050 1060 1070 1080
 GCCACGGAGGACAATGGCTTGTGATATATATGCAGATGACATAGACCCTGCAATGCCT
 341 A T E D N G L F D I Y A D D I D P A M P 360
 1090 1100 1110 1120 1130 1140
 GTACCATCGCGTCCTACTACCTCCTCTGCAGTTCTACATATTGCCCCACTATATCATCT
 361 V P S R P T T S S A V S T Y S P T I S S 380
 1150 1160 1170 1180 1190 1200
 GCCTCTTCCTATAGTAATGTAACGGTCCCTTTAACCTCCTCTTGGGATGTGCCTGTATAC
 381 A S S Y S N V T V P L T S S W D V P V Y 400
 1210 1220 1230 1240 1250 1260
 ACGGGTCCTGATATTACATTACCACCTACTACCTCTGTATGGCCCATTGTATCACCACACA
 401 T G P D I T L P P T T S V W P I V S P T 420
 1270 1280 1290 1300 1310 1320
 GCCCCTGCCTCTACACAGTATATTGGTATACATGGTACACATTATTATTGTGGCCATTA
 421 A P A S T Q Y I G I H G T H Y Y L W P L 440
 1330 1340 1350 1360 1370 1380
 TATTATTTTATTCCTAAAAAGCGTAAACGTGTTCCCTATTTTTTTGCAGATGGCTTTGTG
 441 Y Y F I P K K R K R V P Y F F A D G F V 460
 GCGGCCTAG
 461 A A • 463

HPV18

LV

FIGURE 4. Immunoblot of HPV18 L1 protein expressed in yeast cells.

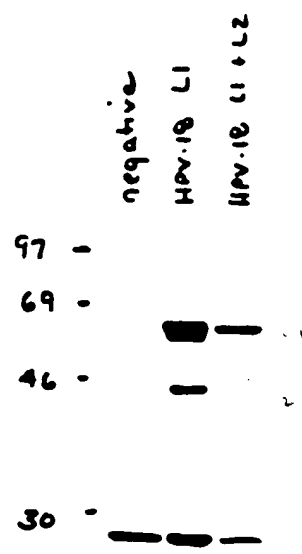


FIGURE 5. Immunoblot of HPV18 L2 protein expressed in yeast cells.

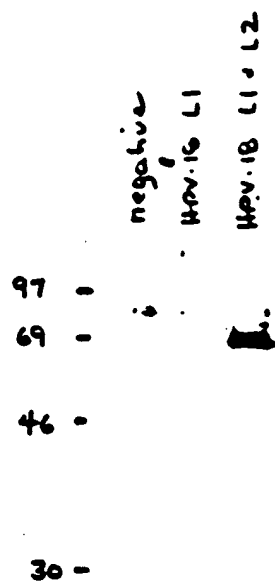
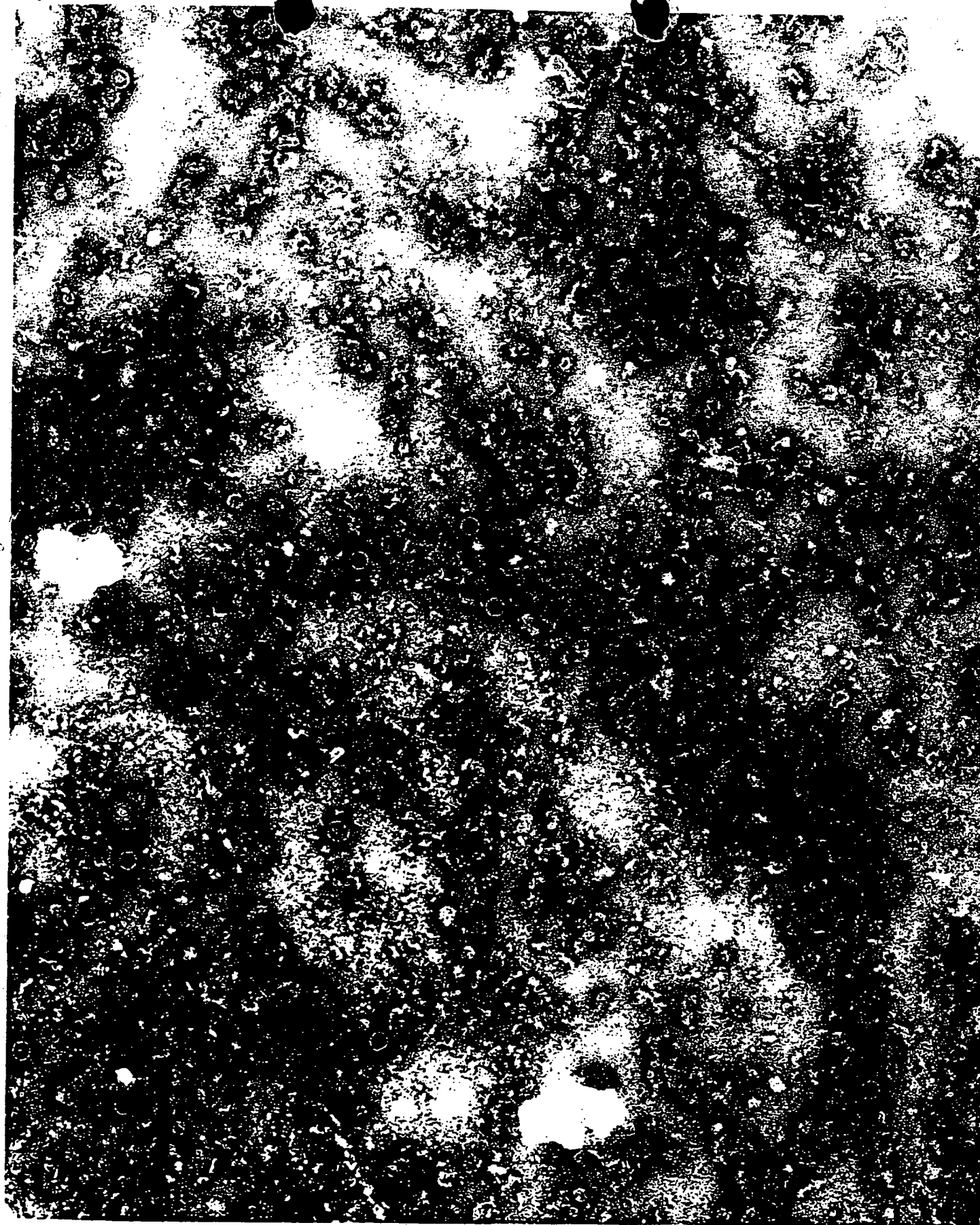


FIGURE 6. Electron micrograph of HPV18 L1 VLPs.



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